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POLICY AND INFORMATION NOTICE 00-1

Subj: DEFINITIONS FOR DEFICIENCY LEVELS AND COI RESOLUTION

Ref: (a) COMOPTEVFORINST 3960.1H

Encl: (1) Definitions for Deficiency Levels and COI Resolution
(2) Baseline Deficiency Decision Tree

1. Purpose. To provide guidance in accurately defining deficiencies identified during operational test and evaluation and the resultant impact on critical operational issue (COI) resolution.

2. Background. The subject of definitions for the deficiencies identified during operational test and evaluation has for many years been one of great debate. Since “operational mission failures” are often a very subjective issue, it is difficult for the analytical and technical staff members of OPTEVFOR to argue the case that a specific failure is categorized as severe, major, minor, or other. In addition, after a resolution of the deficiency level is agreed upon, an entirely new debate begins. That debate is the extent the deficiency has on the resolution of the COI and the overall effectiveness and suitability of the system. This issue is not one confined to within this command, but is being questioned by program managers (PM) from all of the systems commands. The PMs are asking, and rightly so, “What constitutes the level of an operational deficiency?” This question is becoming even more relevant with the increasing complexity and reconfigurability of the systems being developed today and more so in the future. Enclosure (1) is a definition list for current deficiencies (major and minor) as well as two additional deficiencies (severe and other). Enclosure (2) is a tool/decision tree to assist the OTD and analyst in determining the deficiency level and deficiency level impact on COI resolution and fleet release recommendation.

3. Guidance. Enclosures (1) and (2) will be employed as the baseline (i.e., starting point) methodology in determining the "level" of a deficiency (i.e., severe, major, minor, other) identified in operational test and evaluation and the resultant impact of that level on the resolution of COIs. This "baseline"

methodology will then be augmented with the operational judgement of the OTD and that augmentation specified in the report document.

4. Implementation. This policy is effective immediately and will be included in reference (a) as appropriate.

5. Effective Policy and information Notices. None. All previous P&I notes have been incorporated into reference (a).

/S/
S. K. WHITEHEAD
TECHNICAL DIRECTOR

Distribution: (COMOPTEVFORINST 5216.2P)
List I
List III

DEFINITIONS FOR DEFICIENCY LEVELS AND COI RESOLUTION

Severe Deficiency – Prevents the accomplishment of a requirement designated as critical or achievement of a key performance parameter.

If a deficiency is determined to be severe, the affected COI must be resolved UNSAT for OPEVAL and FOT&E and color-coded RED for IOT&E.

Major Deficiency - Adversely affects the accomplishment of an operational or mission essential capability and no work-around solution is known.

If a deficiency is determined to be major, the affected COI must be resolved UNSAT for OPEVAL and FOT&E and color-coded RED for IOT&E. The COI may be "split" to adequately clarify the specific issue that is deficient. Conclusions for IOT&E will be "potentially not …". Conclusions for OPEVAL and FOT&E will be tailored to clarify the specific situation/item affected by the major deficiency (e.g., System is determined to be effective in non-ECM environment and not effective in an ECM environment; System is suitable aboard a DD 963 class, undetermined suitability for other ship classes, etc). The fleet release recommendation would have a caveat for additional test or certification by PM to CNO via COTF prior to fleet release beyond current fleet usage.

Minor Deficiency - Adversely affects the accomplishment of an operational or mission essential capability but a work-around solution is known. If work-around solution is deemed unacceptable, see major deficiency.

If a deficiency is determined to be minor, the affected COI may be resolved SAT for OPEVAL and FOT&E or color-coded other than RED for IOT&E. The effectiveness or suitability conclusion can be "determined effective and/or suitable, or not" for either. If the overall effect of "many" minor deficiencies is considered in the aggregate to be approximately equivalent to a major, then the OTD should consider a negative conclusion and a caveat in the fleet release recommendation.

Other Deficiency – Results in user/operator inconvenience or annoyance but does not affect a required operational or mission essential capability.

RESOLUTION OF COIs

a. OPTEVFOR addresses the resolution of COIs by satisfying the questions posed by the COIs. There is an audit trail from the COI questions through the E- and S-tests. This provides a flow so that the disposition of COIs is directly related to the evaluation of each designed test. Thus, when a test parameter is quantitative, the COI resolution is based on actual results relative to the operational threshold. For nonquantifiable parameters, the COI resolution must be based on two factors: (1) observed results and, (2) operational experience.

b. To resolve a COI, all of its capabilities/functions must be demonstrated and no additional hardware or software changes anticipated prior to the milestone decision. COIs are resolved as follows:

(1) Resolved. The COI was tested and resolved either satisfactorily (SAT) or unsatisfactorily (UNSAT).

(2) Color Codes. Used in early phases of IOT&E (e.g., OT-IIA) other than OPEVAL when the system is immature.

(3) Partially Resolved. . Used when a COI requires further testing for final resolution due to a major limitation.

(4) Unresolved. Used only when the COI was not tested during the particular phase of testing in which it was an issue for resolution. This normally is due to a major (CNO waiver) or severe limitation against the COI.

c. When a COI has been resolved UNSAT, the severe or major deficiencies that caused the UNSAT resolution must be reported in the letter as well as the enclosure. A severe or major deficiency can impact other COIs, and the deficiency can be used to resolve additional COIs UNSAT. The analysis and evaluation will determine the most appropriate primary COI . Once the primary COI has been determined, those same deficiencies may be reported against other COIs as collateral deficiencies.

d. <u>All COIs should be resolved by the completion of OPEVAL</u>. Difficulties achieving this must be brought to the attention of the Commander.

CONCLUSIONS AND RECOMMENDATIONS IN EVALUATION REPORTING. At the completion of each phase of OT, COMOPTEVFOR provides his conclusions and recommendations regarding the system tested to CNO in an evaluation report. The guidelines for determining the key elements of the conclusions and recommendations, based on the results of testing, are:

a. IOT&E Prior to OPEVAL

(1) Conclusions

(a) Effectiveness. Conclusions normally address <u>overall</u> system effectiveness. However, in those cases where the system tested had effectiveness issues in several warfare areas (e.g., air warfare, submarine warfare, surface warfare, etc.), the system should be evaluated in each warfare area and conclusions provided that address effectiveness in each warfare area. Additionally, where systems are tested against several levels of threat systems, the system should be evaluated in each situation (e.g., sub-sonic or supersonic, ECM environment) and conclusions provided that address effectiveness against varying categories of threats or threat environments.

<u>1</u>. Potentially Effective. All effectiveness COIs may not have been scheduled for testing during this period of IOT&E, or the system was not production-representative (i.e., EDM). The issues considered for T&E have been satisfactorily addressed within the scope of this phase of testing or the system design and/or the nature of any problems observed are such that there is a high probability that those critical issues can be satisfactorily resolved prior to OPEVAL and fleet introduction (normally followed by a recommendation to verify deficiency corrections during a subsequent phase of IOT&E). In the event all COIs were scheduled for testing and resolved satisfactorily and the testing was performed on a production-representative test article, in the operational environment using typical operators and maintainers, it could be concluded that the system was operationally effective. This could result in a recommendation that the phase of IOT&E is designated as OPEVAL and the scheduled OPEVAL phase is deleted.

<u>2</u>. Potentially Not Effective. Most of the effectiveness COIs scheduled for testing during this phase of IOT&E were not satisfactorily addressed, as a result of system deficiencies, and the system cannot be concluded to be potentially effective. System design and/or the nature of problems are

such that there is a low probability that issues can be resolved without redesign and verification by further OT&E; or, however well the system performed against TEMP effectiveness issues, the mission has insufficient utility. The conditions to be satisfied in order to become potentially effective should be stated.

(b) Suitability

1. Potentially Suitable. All suitability COIs may not have been scheduled for testing during this phase of IOT&E, or the system was not production-representative (i.e., EDM). The issues considered for T&E have been satisfactorily addressed within the scope of this phase of testing; or the system design and/or nature of any problems observed are such that there is a high probability that those critical issues can be satisfactorily resolved by the completion of OPEVAL to satisfy a recommendation of fleet introduction. In the event all COIs were scheduled for testing and in fact resolved satisfactorily and the testing was performed on a production-representative test article, in the operational environment using typical operators and maintainers, it could be concluded that the system was suitable. This could result in a recommendation that the phase of IOT&E is designated as OPEVAL and the scheduled OPEVAL is deleted.

2. Potentially Not Suitable. Most of the suitability COIs scheduled for testing during this phase of IOT&E were either not satisfactorily addressed as a result of system deficiencies, or they do not have a high probability of being satisfactorily resolved by OPEVAL and fleet introduction, and the system cannot be concluded to be potentially suitable. System design and/or the nature of problems are such that there is a low probability that issues can be resolved without redesign and verification by OT&E. The conditions to be satisfied in order to become potentially suitable should be stated.

(c) Production. There are a number of factors that must be considered before a decision is made to enter into production of a system; OT&E is but one of these many factors. Since COMOPTEVFOR is normally not aware of the status of many of the other issues affecting a production decision, it is inappropriate to comment on production issues based on OT&E alone. Accordingly, no conclusion or recommendation pertaining to production should appear in the evaluation report.

(2) Recommendations. This paragraph addresses COMOPTEVFOR's recommendations regarding continuing program development through fleet introduction, and makes specific recommendations for correction of deficiencies. The recommendations for correction of deficiencies mentioned here should be based on requirements that are either documented in the ORD or are "inherent requirements" for the particular system. For example, a display screen must be legible even if not specifically mentioned in the ORD.

(a) A recommendation regarding limited fleet introduction if appropriate and necessary to continue OT, is provided to assist CNO in determining to whom and in what quantities systems should be introduced to the fleet.

1. No Limited Fleet Introduction. A recommendation against limited fleet introduction will be made if there are severe deficiencies or the aggregate of major deficiencies are so significant as to preclude installing the system on any platform. When fleet introduction is not a consideration in an early phase of IOT&E, no recommendation will be made.

2. Limited Fleet Introduction. Limited fleet introduction will normally be recommended if IOT&E (other than OPEVAL) results are generally satisfactory but there are major deficiencies that result in a conclusion that the OT&E results do not support fleet introduction and/or

further testing on other platforms is warranted. This recommendation may be made contingent upon completion of corrective actions, and may be made contingent upon demonstrating those corrective actions in a subsequent phase of IOT&E. Whenever possible, a recommendation for limited fleet introduction should specify to what level or units the introduction should be made (e.g., units required for next phase of OT&E, air squadrons operating in specific scenarios, ships with no other self-defense system, etc.).

3. Other Types of Recommendations. A recommendation may be made to continue the acquisition program (i.e., continue development) as defined in the TEMP when IOT&E results are satisfactory insofar as they are available and there is no reason to recommend termination of the CNO-approved program shown in the TEMP. Recommendations may be made for corrective action on deficiencies noted in IOT&E, but not of such significance that their correction has been specified as a prerequisite to limited fleet introduction. No recommendation should be made on any deficiency unless it caused a problem that degraded potential effectiveness or suitability and has been discussed in the report.

b. Operational Evaluation (OPEVAL)

(1) Conclusions. It is required that conclusions in OPEVAL be definitive; i.e., effective or not effective, suitable or not suitable. Sufficient data should be collected and an evaluation conducted to preclude a potentially effective or potentially suitable conclusion at OPEVAL.

(a) Effectiveness. Conclusions normally address overall system effectiveness. However, in those cases where the system tested had effectiveness issues in several warfare, mission, or environmental (e.g., jamming) areas (e.g., air warfare, submarine warfare, surface warfare, etc.) or in several threat regions, the system should be evaluated in each area or threat region and conclusions provided that address effectiveness in each area. Characterize the systems performance as regarding where or under what conditions the system was or was not effective (e.g., effective in a non EA environment, effective against specific threat class; or undetermined against other threat class, etc.)

1. Effective. All effectiveness COIs were completely and satisfactorily resolved and there were no severe or major deficiencies. If as a result of waivers or limitations to test there are COIs or portions of COIs that remain incomplete, characterize the system effectiveness and recommend additional IOT&E or fleet data to resolve.

2. Not Effective. If all of the effectiveness COIs were not satisfactorily resolved due to severe or major deficiencies then the system cannot be concluded to be effective. System design and/or the nature of problems is such that there is low probability that issues can be resolved satisfactorily without redesign and verification by further OT&E; or, however well the system performed against TEMP effectiveness issues, the mission has insufficient utility.

(b) Suitability

1. Suitable. All suitability COIs were completely and satisfactorily resolved and there were no severe or major deficiencies, If as a result of waivers or limitations to test there are COIs or portions of COIs that remain incomplete, characterize suitability and recommend additional IOT&E or fleet data to resolve.

2. Not Suitable

a. If all suitability COIs are not satisfactorily resolved then the system cannot be concluded to be suitable. System design and/or the nature of problems is such that there is low probability that issues can be resolved satisfactorily without redesign and verification by further OT&E.

b. Not suitable conclusions are normally derived from severe or major deficiencies within COIs, which caused the COIs to be resolved UNSAT. There are times, though, when a COI will have an abundance of minor deficiencies. These cumulative minor deficiencies may add up to a major deficiency, and will cause a COI to be resolved UNSAT.

(2) Recommendations. A recommendation regarding fleet introduction is obligatory if the system(s) is intended for fleet use, or to support Milestone III, or if the TEMP requires it. COMOPTEVFOR addresses fleet introduction as follows:

(a) Fleet Introduction. Fleet introduction will normally be recommended if it has been concluded that the system is operationally effective and suitable. This recommendation may be made contingent upon completing specified actions to correct major deficiencies observed in OT&E including, if appropriate, verification in FOT&E.

(b) Limited Fleet Introduction. Limited fleet introduction can sometimes be recommended if OT&E results are not generally satisfactory and it has been concluded that the system is not operationally effective and/or suitable, but there is some benefit to the fleet by introducing the system in limited quantities to specified units. This recommendation will almost always be made contingent upon completion of corrective actions, and may be made contingent upon demonstrating those corrective actions in a subsequent IOT&E or a phase of FOT&E. When recommending limited fleet introduction, the conditions that must be satisfied before fleet introduction should be specified and will ordinarily include FOT&E whenever system design changes are necessary. The effectiveness and suitability features to be demonstrated in FOT&E must be specified. Whenever possible, a recommendation for limited fleet introduction should specify to what level of units the introduction should be made (e.g., units required for next phase of OT&E, air squadrons operating in specific scenarios, etc.).

(c) No Fleet Introduction. A recommendation against fleet introduction will be made if it has been concluded that the system is not operationally effective and/or suitable.

(3) Other Types of Recommendations

(a) A recommendation should be made addressing the purpose of the review or milestone at which the OT&E results are to be considered if other than Milestone III (e.g., proceed into full scale engineering development).

(b) Recommendations may be made for corrective action on deficiencies noted in OT&E, but not of such significance that their correction has been specified as a prerequisite to limited fleet introduction or fleet introduction. No recommendation should be made on any deficiency unless it caused a problem that degraded effectiveness or suitability.

c. Follow-on Operational Test and Evaluation

(1) Conclusions. The conclusions drawn in FOT&E will address the system's operational effectiveness and operational suitability, and fleet introduction if fleet introduction was not recommended at OPEVAL or no IOT&E was conducted. When the FOT&E is being conducted to examine the integration of a system into other platforms or aircraft, the conclusion will address the system's operational effectiveness and operational suitability in the platform or aircraft tested, and, if applicable,

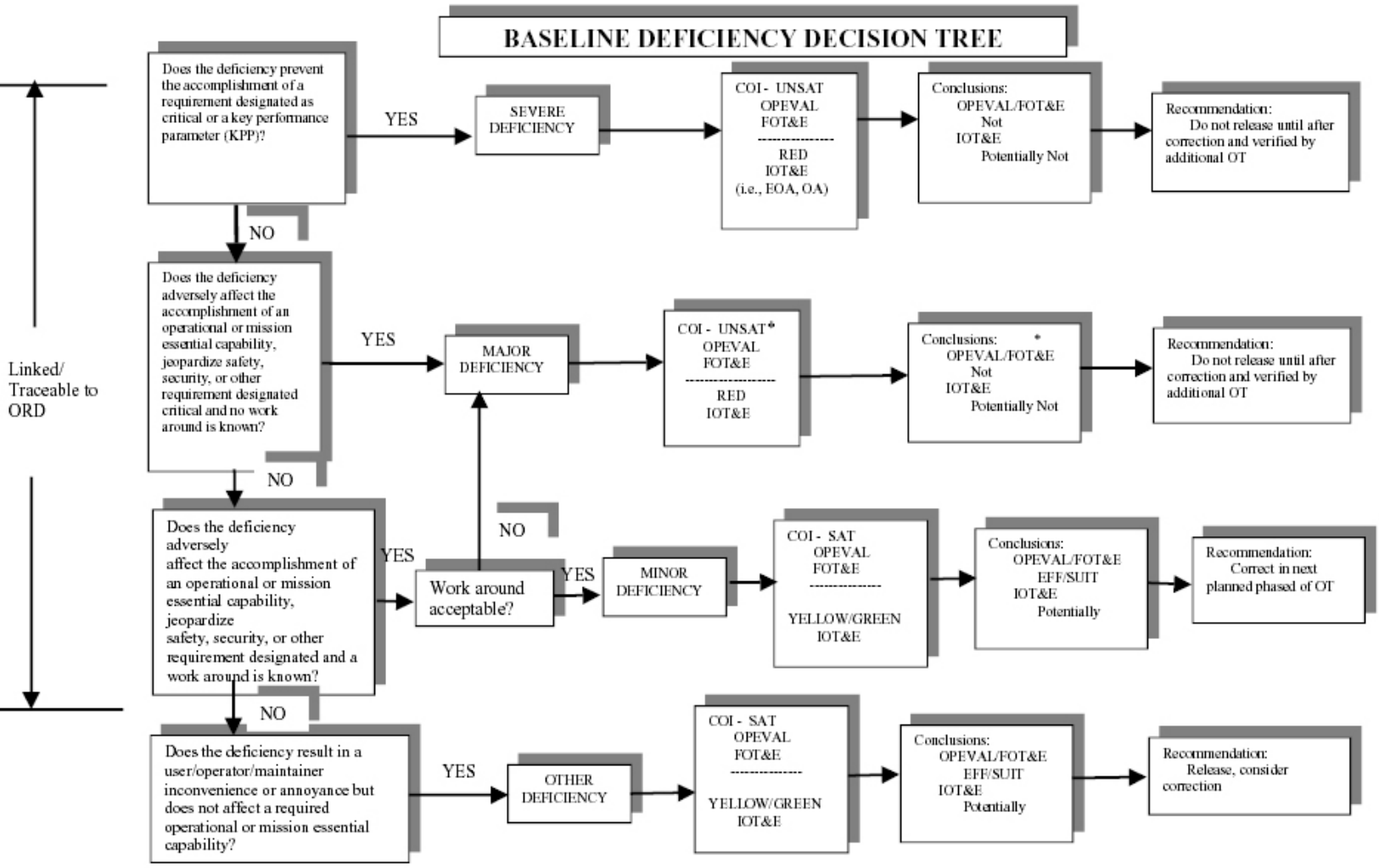
fleet introduction of the system in the platform or aircraft. In those cases where the FOT&E is conducted to examine an upgrade to a system already in production or release of an improved software revision, the conclusion will address the operational effectiveness and operational suitability of the system with the upgrade or new software, and fleet introduction of the upgraded system or fleet release of the new software version.

(2) Recommendations

(a) A recommendation regarding fleet introduction is obligatory or if a recommendation for fleet introduction has not been made in previous OT&E.

(b) In those cases where the FOT&E is to examine the integration of a system into other platforms or aircraft, or to examine an upgrade to a system already in production, a recommendation regarding fleet introduction is obligatory.

(c) The guidelines for determining the level of fleet introduction of systems in FOT&E are the same as for OPEVAL.



- A deficiency is defined as "lacking in some necessary quality, capability or element" or "not up to a normal standard or complement".
- Operational capability is defined as an ability or means that is directly traceable to an approved requirement (i.e., ORD, FD, etc)
- Mission essential capability is defined as an ability that is inherently necessary to complete an assigned mission (e.g., a targeting mechanism is required to properly aim a weapon system but the targeting mechanism/system may not be part of the weapon system under test).

* See details